

## CLAIMS

We claim:

1. A method of selecting compounds that inhibit herpes viruses comprising:
  - a) measuring IC<sub>50</sub> of a compound of interest that inhibits a wild type herpes virus,
  - 5 b) measuring IC<sub>50</sub> of the same compound that inhibits a binding domain mutant herpes virus which is the same strain as the wild type herpes virus,
  - c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
  - d) selecting the compound of interest wherein the IC<sub>50</sub> of step b is at least 3 times greater than the IC<sub>50</sub> of step a.
- 10 2. A method of selecting compounds that inhibit herpes viruses comprising:
  - a) measuring IC<sub>50</sub> of a compound of interest that inhibits a binding domain mutant herpes virus,
  - b) measuring IC<sub>50</sub> of the same compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus,
  - 15 c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
  - d) selecting the compound of interest wherein the IC<sub>50</sub> of step a is at least 3 times greater than the IC<sub>50</sub> of step b.
- 20 3. The method of claim 1 or 2 wherein the herpes virus is HSV-1, HSV-2, HCMV, VZV, EBV, or HHV-8.
4. A method of selecting compounds that inhibit herpes viruses comprising:
  - a) measuring IC<sub>50</sub> of a compound of interest that inhibits a wild type HSV-1,
  - 25 b) measuring IC<sub>50</sub> of the same compound that inhibits a binding domain mutant HSV-1 which is the same strain as the wild type herpes virus,
  - c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
  - d) selecting the compound of interest wherein the IC<sub>50</sub> of step b is at least 3 times greater than the IC<sub>50</sub> of step a.
- 30 5. A method of selecting compounds that inhibit herpes viruses comprising:
  - a) measuring IC<sub>50</sub> of a compound of interest that inhibits a binding domain mutant HSV-1,

- b) measuring IC<sub>50</sub> of the same compound that inhibits a wild type herpes virus which is the same strain as the mutant HSV-1,
- c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
- d) selecting the compound of interest wherein the IC<sub>50</sub> of step a is at least 3 times greater than the IC<sub>50</sub> of step b.

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- 6. The method of claim 4 or 5 wherein HSV-1 is HSV-1 KOS, HSV-1 F, HSV-1 DJL or HSV-1 Patton.

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- 7. The method of claim 5 or 6 wherein the mutation of a wild type herpes virus to mutant herpes virus is at amino acid 823 from valine to alanine.

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- 8. A method of selecting compounds that inhibit herpes viruses comprising:
  - a) measuring IC<sub>50</sub> of a compound of interest that inhibits a wild type HSV-2,
  - b) measuring IC<sub>50</sub> of the same compound that inhibits a binding domain mutant HSV-2 which is the same strain as the wild type herpes virus,
  - c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
  - d) selecting the compound of interest wherein the IC<sub>50</sub> of step b is at least 3 times greater than the IC<sub>50</sub> of step a.

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- 9. A method of selecting compounds that inhibit herpes viruses comprising:
  - a) measuring IC<sub>50</sub> of a compound of interest that inhibits a binding domain mutant HSV-2,
  - b) measuring IC<sub>50</sub> of the same compound that inhibits a wild type herpes virus which is the same strain as the mutant HSV-2,
  - c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
  - d) selecting the compound of interest wherein the IC<sub>50</sub> of step a is at least 3 times greater than the IC<sub>50</sub> of step b.

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- 10. The method of claim 8 or 9 wherein HSV-2 is HSV-2 MS, HSV-2 35D, or HSV-2 186.

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- 11. A method of selecting compounds that inhibit herpes viruses comprising:

- a) measuring IC<sub>50</sub> of a compound of interest that inhibits a wild type HCMV,
- b) measuring IC<sub>50</sub> of the same compound that inhibits a binding domain mutant HCMV which is the same strain as the wild type herpes virus,
- c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
- 5 d) selecting the compound of interest wherein the IC<sub>50</sub> of step b is at least 3 times greater than the IC<sub>50</sub> of step a.

12. A method of selecting compounds that inhibit herpes viruses comprising:

- a) measuring IC<sub>50</sub> of a compound of interest that inhibits a binding domain mutant HCMV,
- 10 b) measuring IC<sub>50</sub> of the same compound that inhibits a wild type herpes virus which is the same strain of the mutant HCMV,
- c) comparing IC<sub>50</sub> of step a with IC<sub>50</sub> of step b; and
- d) selecting the compound of interest wherein the IC<sub>50</sub> of step a is at least 3 times greater than the IC<sub>50</sub> of step b.

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13. The method of claim 8 or 9 wherein HCMV is AD169.

14. The methods of claims 1, 4, 8, or 11 wherein IC<sub>50</sub> of step b is at least 5 times greater than the IC<sub>50</sub> of step a.

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15. The methods of claims 2, 5, 9, or 12 wherein IC<sub>50</sub> of step a is at least 5 times greater than the IC<sub>50</sub> of step b.

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16. A method for selectively treating diseases caused by herpes viruses in a human host comprising administering a compound to a human in need of such treatment wherein said compound inhibits herpes viruses by interaction with the binding domain in the viral DNA polymerase.

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17. A method for selectively inhibiting herpes viruses in a human host comprising administering a compound to a human in need of such treatment wherein IC<sub>50</sub> of the compound that inhibits a binding domain mutant herpes virus is at least 3 times

greater than IC<sub>50</sub> of the compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus.

18. The method of claim 17 wherein IC<sub>50</sub> of the compound that inhibits a binding domain  
5 mutant herpes virus is at least 5 times greater than IC<sub>50</sub> of the compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus.
- 10 19. The method of claim 17 wherein herpes viruses is HSV-1, HSV-2, HCMV, VZV, EBV, or HHV-8.
- 15 20. A compound for treating herpesviral infections in a human host wherein IC<sub>50</sub> of the compound that inhibits a binding domain mutant herpes virus is at least 5 times greater than IC<sub>50</sub> of the compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus.
21. A compound for treating herpesviral infections in a human host wherein said compound inhibits the herpesvirus by interacting with the binding domain in the viral DNA polymerase.
- 20 22. The herpesviral infection of claim 20 or 21 which is HSV-1, HSV-2, HCMV, VZV, EBV, or HHV-8 infection.
- 25 23. A compound for the inhibiting of herpesvirus DNA polymerases wherein passage of a wild type herpes virus in the presence of said compound results a change of the wild type HSV-1 polymerases at amino acid 823 from valine to alanine.
- 30 24. A compound for inhibiting herpesvirus DNA polymerases wherein passage of a wild type herpes virus in the presence of said compound results in a change of the wild type HCMV polymerases at amino acid 823 from valine to alanine and at amino acid 824 from valine to leuline.

25. A mutant herpesvirus DNA molecule having a nucleotide sequence selected from a group consisting of SEQ.ID.NO. 1; SEQ.ID.NO. 3; SEQ.ID.NO. 5; SEQ.ID.NO. 7; SEQ.ID.NO. 9; and SEQ.ID.NO. 11.
- 5    26. A mutant herpesvirus polymerase amino acid molecule having an amino acid sequence selected from a group consisting of SEQ.ID.NO. 2; SEQ.ID.NO. 4; SEQ.ID.NO. 6; SEQ.ID.NO. 8; SEQ.ID.NO. 10 and SEQ.ID.NO. 12.